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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/632,708	08/01/2003	Ronny Bar-Gadda	00021-003	3621
40461	7590	12/28/2006		
EDWARD S. WRIGHT 1100 ALMA STREET, SUITE 207 MENLO PARK, CA 94025			EXAMINER LANGEL, WAYNE A	
			ART UNIT 1754	PAPER NUMBER

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	12/28/2006	PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

## Office Action Summary

Application No.

10/632,708

Applicant(s)

BAR-GADDA, RONNY

Examiner

Wayne Langel

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-59 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-59 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 01 August 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. ____.                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>12-19-05</u> .  | 6) <input type="checkbox"/> Other: ____.                          |

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The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-23 and 26-56 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP 56-17902 in view of either Kogan or Lee et al. JP 56-17902 discloses a process for forming hydrogen and oxygen by vaporizing water in air or an inert gas stream and dissociating at about 2500 °C in a microwave plasma. (See the English Abstract.) The difference between the process disclosed by JP 56-17902, and that recited in applicant's claims, is that JP-56-17902 does not disclose that the oxygen species and hydrogen species are removed from the plasma so that the oxygen species forms gaseous oxygen and the hydrogen species forms gaseous hydrogen. Kogan and Lee et al both disclose the separation of water into hydrogen and oxygen, and teach that the hydrogen and oxygen may be separated by passage through a membrane. (See col. 2, lines 1-28 of Kogan, and the Abstract of Lee et al. It would be obvious from either Kogan or Lee et al to separate the hydrogen and oxygen formed in the process of JP 56-17902 by passage through a membrane. One of ordinary skill in the art would be motivated to do so, since Kogan and Lee et al establish the desirability of separating hydrogen from oxygen from thermally split water by use of membranes. Regarding claims 55 and 56, the catalyst metal in the process of JP 56-17902 would inherently redirect the oxygen species and hydrogen species into molecular hydrogen and oxygen. Regarding claims 51-54, it would be obvious to cool the plasma of JP 56-17902 by the

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conventional step of adding a seed material so as to prevent excessively high temperatures. Molecular hydrogen and molecular oxygen would inherently be formed as the gases are cooled.

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-16 are rejected under 35 U.S.C. 102(e) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Wootan et al '164. No distinction is seen between the process disclosed by Wootan et al '164, and that recited in claims 1-16. Wootan et al '164 discloses the generation of hydrogen and oxygen by injecting water molecules into a plasma. (See the Abstract and Paragraphs [0036] to [[0038].) The combination of the oxygen with carbon to form carbon dioxide gas in the process of Wootan et al '164 would constitute the steps of "separating within said plasma said hydrogen species from said oxygen species" and removal of such species, as required by applicant's claims.

Claims 39-54 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wootan et al '164. Wootan et al '164 is relied upon as discussed hereinbefore. It would be further obvious to modify the process of Wootan et al '164 with the conventional expedients recited in claims 39-54.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

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The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-59 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. It is indefinite as to whether "hydrogen species" and "oxygen species" would be limited to atomic hydrogen and atomic oxygen, respectively, or whether the terms could embrace molecular hydrogen and molecular oxygen. In claim 15, "selected one of...and" is improper Markush terminology. In claims 52 and 53, "selecting from" is improper Markush terminology. Also in claim 52, "low" renders the scope of the claim vague and indefinite, since it is a relative term.

Burgand and Fletcher are made of record for disclosing the dissociation of water into hydrogen and oxygen.

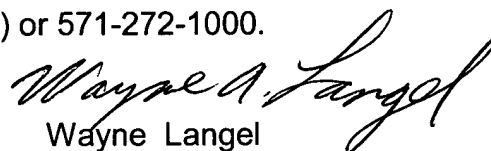
This application apparently discloses allowable subject matter (i.e., regarding the subject matter of claims 24, 25 and 57-59).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Wayne Langel whose telephone number is 571-272-1353. The examiner can normally be reached on Monday through Friday, 8 am - 3:30 pm Eastern Time.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stanley Silverman can be reached on 571-272-1358. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Wayne Langel  
Primary Examiner  
Art Unit 1754